Government Commitment and Dynamic Inconsistency in Public-Private Partnership for Infrastructure

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ABSTRACT

The greater transfer of risks and responsibilities to the private investor, and the nature of PPP as a long-term contractual arrangement that involves bundling, predisposes PPP to the following inter-related problems: governmental commitment and dynamic inconsistency. These problems are enhanced by risk factors inherent in legal and administrative turn over, unfavorable modifications of PPP's legal framework, as well as unilateral decisions that undermine the private investor's payoff. The possibility of these problems that characterize many developing countries is an important factor when considering in private investment utility and disutility. To a large extent, these considerations are based on the 'sunken' nature of infrastructure investment, and the huge loss that comes with project failure. As a long-term contract that spans through many regulatory regimes, the length of PPP concessions are often longer than the political mandate of the regime that signed the contract. Having less of the bargaining power when investments are 'sunk', the private investor may end up enjoying less of the anticipated benefits if a government that has a possibility of breaking the initial agreement resorts to opportunism. Thus, attempts are made to address the following questions: what are the devices by which government gets committed to fulfilling a certain obligation in PPP; how are these devices affected by the bargaining personality of the government; is it possible to make the benefits of unilateral deviation less desirable for the government in PPP?

Keywords: **Commitment, inconsistency, and Public-Private Partnership.**

## 1.	Introduction

To overcome the problems of infrastructure provision, such as the inability of government's capital investment to provide steady and reliable flows of infrastructure services, and the high cost that end-users incur in their effort to substitute or complement the deficiency in public provision, it has been argued that the levels of investment required for meeting the challenges cannot be financed by the government alone. As a result, encouraging private investment in infrastructure has been acknowledged as an option that governments cannot afford to overlook. With time, Public-Private Partnership for Infrastructure is thus defined as an agreement or commercial transaction between a public institution and the

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private sector in terms of which the private sector performs an institutional function in collaboration with the government. During such arrangement, the private sector can acquire the use of the state property; assume substantial financial, technical and operational risks; and receive a benefit for delivering the stated services through government payment, user charges, or a combination of both (Binza, 2008: 297).

In essence, the capacity of any country to implement PPP successfully will depend on a lot of domestic institutional factors. These factors, as Manasse (2005) observes may include the risks inherent in legal and administrative turn over, the risks of opportunism, hold-up problems, unfavorable modifications of the legal framework, breach of contract by public enterprise, as well as unilateral decisions and changes that may undermine the payoff of the private investors. When compared with traditional procurement, the greater transfer of construction, operational and demand risks and responsibilities to the private consortium, and the nature of Public-Private Partnership for Infrastructure as a long-term contractual arrangement that bundles project design, building, financing and operation (DBFO), predispose it to these strategic problems: imperfect commitment and dynamic inconsistency.

The possibility of these governmental problems that characterize many developing countries is an important factor when considering private investment utility and disutility. utility and disutility considerations. To a large extent, these considerations are based on the 'sunk' nature of infrastructure investment, the huge cost that project failure implies, as well as on the presence of marginal benefits that may depend on the lifelong cost of the project. Consequently, the irreversibility of infrastructure investments (particularly when the future of the partnership is uncertain) may affect the decision to invest. In the light of these problems, private payoff and the marginal benefits that accrue from long-term cost minimization investments (given its expectations) will be difficult to realize. Having less of the bargaining power when investments are sunk, the private investor may end up receiving less of the anticipated benefits, especially when a government that has no credible disincentive for breaking the initial agreement leads a renegotiation.

Observably, PPP as a long-term contract spans through many regulatory regimes. In most cases, the length of the long-term binding partnership is greater than the political mandate of the regime that entered into the partnership. In that case, if there are differences in the objectives or preferences of the incumbent and the successive regimes, the successive regimes will have the incentive to renege on the commitment of by previous regime(s). Risks associated with these possibilities can increase the cost of borrowing, while still discouraging potential private investors. Consequently, the main challenges to be addressed in this regard are as follows: to formalize the ways by which government regimes affect PPP concessions; to simulate the possible impacts of government commitment inconsistency in PPP benefits;

and to derive the circumstances or necessary conditions that can enhance the credibility of government guarantees and commitment in PPP.

2. Related Literature

The reviewed literature is organized into two sections. The first section deals with past studies on PPP as a strategic interaction, while the second section deals with past studies on the effects of commitment and consistency.

PPP as a Strategic Interaction

With regard to the strategic interactions that take place in the context of public-private partnership, the main subjects of enquiry have been the various implications of unverifiability, moral hazard, bounded rationality and contract design for the incentive of private investors. Essentially, the concepts of hidden actions, non-verifiability and non-observablity have been identified as critical determinants of under-investment, corner-cutting, and incompleteness in PPP. These factors are believed to underlie the difficulties that are involved in the verification of effort and personal weakness. In addition, these factors have been identified as some of the critical determinants of the incompleteness in PPP concessions. In his paper titled "Costly Evidence Production and the Limits of Verifiability," for instance, Bull (2006) makes reference to how complicated it is to show that the call for an amendment in a contract agreement was brought about by concessionaires' internal failures and weakness. Given the cost of litigation in PPP, he noted that cases involving a concessionaire's partial or poor performance of obligations are sometimes difficult to solve. Such litigations, Bull (2006) contends, usually entail long periods that can worsen the relationship between the parties involved.

Regarding the fact that a project's quality attributes are hard to specify ex-ante, Laure and Saussier (2007) have argued that it is possible for the private investor to under-invest or come up with innovative ways of providing the services after the initial contract has been signed. Since such innovations could not be foreseen when the initial contract was designed, they contend that bargaining on how to share the surplus generated by the innovation may take place ex-post. As a result, "the private operator's anticipation on the outcome of such bargaining may affect its incentive on innovations" (Laure and Saussier, 2007: 7).

In Hammami et al (2006); Guasch et al (2006); and Iossa & Martimort (2008), the issues of incentive, risk-aversion, and demand risk transfer in concession have also been addressed. In their analyses, the social value or benefit of an infrastructure project is assumed to be hardly contractible since no related statistics can capture the actual value of realized social benefit in a given project. On the basis of this view, they agree that quality-enhancing

efforts would attract additional costs. In the absence of a marginal benefit (in terms of payment or rents) for the "quality-enhancing" efforts, they noted that the concessionaire's willingness to invest in cost-reducing innovations would be constrained.

Drawing from the observation that the incentive of the private investor depends to a large extent on contract design, studies have also been conducted on the circumstances under which concessions contracts are optimal. These studies also include frameworks for ascertaining the potentials for renegotiation and transaction cost, the trade-offs between flexibility and rigidity in contract design, and the impact of asset ownership on the concessionaire's incentive to invest in log-term project quality and durability. Based on these observations, it is argued that the delegation of public infrastructure development to the private sector is vulnerable to moral hazard (Martimort & Pouyet, 2008). In a similar vein, Ho (2006) has analyzed the implications of joint ownership, subsides, bail-out promise, and project rescue policy on private's incentives for re-negotiation in PPP projects. Particularly, Ho examines how the promise of rescuing a distressed project influences the recourse to opportunistic bidding. In Ho's view, the possibility of exploiting renegotiation in a complex contract like PPP is a typical behavior of opportunism that poses a serious challenge.

Observably, most previous studies on the strategic interaction in PPP are based on the generous assumption that the government (unlike the profit-oriented private investor) is a social welfare maximizer that has intrinsic incentives or motivations that are inimical to dynamic inconsistency and opportunistic behavior. Thus, the main emphases have been on how to provide incentive compatible constraints that will enhance the efficient delivery of projects by the private investor. Worldwide evidence with regard to government default, particularly in developing countries has given rise to calls for theoretical framework that will formalize government behavior in PPP. In response to these issues, Aubert and Laffont (2004) have analyzed some of the mechanism by which a government can affect long-term concessions. They observe that most government regulatory distortions with regard to infrastructure concessions are based on a regime's anticipated probability of remaining in power throughout the lifetime of the contract. They characterized government-led distortions and renegotiations in PPP as a sequential game that impinges on private investment; thereby, making an optimal partnership to be a function of political stability, time preference and government commitment.

Using non-cooperative, non-zero-sum game (where each player is solely interested in his or her own payoff), Moszoro (2011) has analyzed the strategic interaction that takes place in public-private project financing in the absence or presence of government regulation. In this model, Moszoro assumes that a Build-Operate-Transfer project can be seen as a good example of prisoners' dilemma, where both parties gain considerably more with cooperation.

Notably, Moszoro's study can be regarded as a major deviation from the tradition of keeping the government out, when it comes to the analysis of moral hazard in PPP.

The Effects of Commitment and Consistency

With reference to mechanism design, an imperfect commitment is referred to as settings or arrangements "...in which the party in the role of the mechanisms designer cannot fully commit to the outcomes induced by the mechanisms" (Bester and Strausz, 2000a: 1077). In the views of Kara (2007), "a convenient way to introduce the intermediate behavior between discretion and full commitment is to divert from the main assumptions underlying commonly used full commitment set up in literature: [...] that commitment lasts forever". To negate those assumptions, Kara argues that there is an exogenous process that necessitates the stochastic reformulation of commitment. He argues that if one refers to full commitment as an ideal policymaking, it could thus be argued that distortions and deviations can make a policy rule less efficient.

Furthermore, Debortoli et al (2010) have examined the implication of imperfect commitment on interest rate setting, the sources of business fluctuations and social welfare. Using a two-state Markov stochastic process (where 1 denotes that previous commitments are honored, and 0 if government reneges), they have analyzed the gains of central bank commitment, as well as the volatilities that discretion induces on inflation, wage shock, investment cost adjustment, risk premium, and other investment specific variables.

Numerous studies have also been carried out, regarding the problems of dynamic inconsistency. Kydland and Prescott (1977) have analyzed the negative effects of policy inconsistency on the maximization of social objective function. This effect in their words is "an argument for rules rather than discretion" (Kydland and Prescott, 1977: 474). Using a rational expectation model with costs of adjustments, they argue that changes in administration do have an immediate effect on the expectation of rational agents from future policies.

Using a dynamic game perspective, Evans (1987: 25) has analyzes the "problem of inconsistency that arises in the absence of a commitment by the government to follow the originally announced policy" at some future date. Since the private sector behavior is partially determined by a forward-looking expectation, he argues that the government is in a position similar to a Stackelberg leader in a dynamic game. In particular, given the existence of hidden incentives, Evans noted that it is possible for a government to misrepresent its preferences in an attempt to manipulate the private's expectations. Treating trends as a reaction function of the "follower" in a game where government is the leader, Evans (1987) contends that it is important to find out the conditions that will make a government consistent: a mechanism to commit the government to its original agreement.

As with Evans (1987), Roberds (1986) have used dynamic game models to examine the problems associated with an environment where policy is set by a sequence of policy-making regimes and administrations that come into power at random intervals. In this study, Roberds simulates the effects of stochastic re-planning; political uncertainty and administration turn over in a rational expectation setting. Although the simulations were made in the context of price levels and money stock, the game theoretic perspective takes into account the possible scenarios that would result in a game where payoffs are realized at a later date (during which a new regime might have the incentive to behave opportunistically).

Comparatively, most of the current literature on dynamic inconsistency and imperfect commitment are based on macroeconomic and monetary policy analysis. Thus, their analyses have involved the use of precise time series information on most of the relevant variables. From a policy ineffectiveness perspective, however, insights from these analyses can be expanded to take into account the issue of government commitment and inconsistency in PPP.

3.   Modeling Commitment and Dynamic Inconsistency in PPP

Most models on the strategic interaction over risks and incentives in a contractual relationship adopt the principal-agent model, in which the principal employs and agent to deliver a given service on his behalf. In a principal-agent context, moral hazard is used to characterize the settings when an agent's effort is not verifiable. As a result of which, the agent will have the incentive of choosing a less costly effort. Since the chances of success (in terms of the service quality and efficiency) highly depend on the amount of effort invested by the agents, among other factors, principal-agent modeling involves the design of compensation schemes that will make the investment of high effort rational for the agent. Following this line of thought, a number of prescriptions have been made on how to motivate the agent. Since moral hazards are facilitated by the problem of verification, the principal is advised to link the incentives that are offered to the agent to some variables that can be verified – such as output. Some other recommendations in this regard include the use of performance based contracts, and appropriate risk allocation.

Observably, a slightly ignored issue in the principal-agent model is that the principal is not immune to various forms of moral hazard. In a long term relationship like PPP, contracting with different principals (or different government regimes) can exacerbate the scope of risks or hazards that can come from the partner in the position of the principal.

Given the presence of conditional and binding agreements, communication between the partners, as well as some hindrances that facilitate the existence of information asymmetries, the strategic interaction in PPP are described as a "quasi-non-cooperative game and quasi-cooperative game" (Moszoro 2011: 6). Based on this feature, modeling the behaviors of partners in PPP may be problematic. The problem is further compounded when

one considers the transition from non-cooperation (in terms of bargaining) to an agreement to cooperate, and the possibility of competition (among the players) in the process of the partnership. On the one hand, the definition of non-cooperative game modeling "with the supposition that the players are unable to communicate or negotiate binding agreements with each other" makes it "particularly suited for analyzing situations where there are obstacles that block explicit player communication, or where institutional mechanisms for enforcing contracts do not exist" (Zagare, 1986: 63). Arguably however, interpreting PPP as an arrangement with a zero possibility of binding agreements will have serious implications on outcome and behavior prediction.

Ideally, PPP should be modeled as a coalition. To facilitate this understanding, analysis, we can divide the strategic interaction PPP into three stages: the pre-play (bidding negotiation, and procurement stage), the agreement stage (the formal establishment of the partnership or joint decision), and the ex-post stage (or the latter part of the partnership when a reasonable amount of investments are sunk). The bargaining that takes place at the pre-play stage is a good example of a non-cooperative game. During this stage, the government and the investor are free to sign whatever agreement they choose about the strategies to use in the partnership they are about to form. Once an agreement is reached, it is assumed to mark the beginning of the partnership. With a binding agreement, the non-cooperative structure of the pre-play negotiation will become largely irrelevant, as the players focus on the payoffs that each will receive if the project is implemented. The focus of this illustration is on the interaction that takes place on the last two stages. Following Binmore (2007), we also assume that these two stages will contain an apparatus of a legal system that will make the partners to honor the contract, a compensation scheme, and any other thing that bears on the respective objectives of the partners.

Given the potential for competition among players in the process of PPP, modeling commitment and consistency in PPP will require the use of insights from non-cooperative and cooperative game theories. This mix is informed by the following reasons. On the one hand, the concentration of cooperative forms on cost/payoff sharing makes it less suited for capturing the potential for cheating and free-riding in a coalition. On the other hand, it makes sense to use cooperative concepts in the study of partnerships where players agree to jointly implement a given project through an appropriate allocation of risks and responsibilities. In addition, PPP is formed on the rationale that much could be achieved through partnership. Based on cooperative game concepts, it can be argued that a PPP will form if the surplus the partnership generates is larger than the sum of individual efforts.

In literature, the achievement of this surplus (such as timely delivery, value-for-money) is accounted for through the notions of collaborative advantage and task bundling.

PPP is thus seen as a method by which governments utilize or mobilize private sector investment capital to revitalize public services (Clark and Root, 1999; Asian Development Bank, 2007). With regard to value-for-money, reference is made to huge annual losses from inefficiencies and poor pricing policies in "loss-making public enterprises" (Harris, 2003: 4). In line with these views, PPI is defined as "a cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards" (Canadian Council for Public-Private Partnerships). In addition, PPP can also be seen as an investment opportunity for the private sector.

Characteristically therefore, PPP can be referred to as a coalition of two players. Based on individual rationality, it can be said that no player will enter into the partnership when the value that is created is less than or equal to zero (which is the reservation utility of both partners in the absence of the partnership. In spite of the differences in their quantification, benefit for the government could mean the efficient provision of a given service to the society, in addition to any other positive impact that the provision of the given infrastructure service could have in the economy; while benefit for the private investor can be interpreted as profit or return on investment. Typically, the value of the surplus created in the partnership will depend on the pair of joint strategies that is exerted by each player. On the one hand, the government's action set may include any of the following: cooperation or fulfillment of specified agreements, and defection or non-fulfillment of partnership agreement. In addition, the scope of governments' non-compliance can be extended to include all deliberate government actions and inactions that are inimical to the achievement of the stated or agreed upon objectives of the partnership (including expropriation, discriminatory policies, and the withdrawal of initially agreed support). On the other hand, the action set of the private investor may include any of the following: cooperation or efficient project delivery, and inefficiency or cheating. Using non-cooperative prisoners' dilemma configuration regarding public goods provision, the prospects of free-riding PPP will be very high in the absence of a binding agreement. In such a case, it will be irrational for the players to cooperate in the first place.

Invariably, the formation of the partnership would imply that both players have signed up to a joint choice of strategy (including how the eventual payoffs are to be distributed). Following Binmore (2007) however, we also argue that it may not be enough to have a binding agreement, since "we have all broken our words at one time or another because something else seemed more important at that time"(Binmore, 2007: 21). In real life for instance, the ability of the government to honor a contract agreement may depend on a number of stochastic factors like the prospects of re-election, corruption, and public

perception, *etc*. As a result, it is argued that a truly binding agreement should give the players and overwhelming reason to keep their commitments.

4.   The Problem of Imperfect Commitment in PPP

The decision of any government to form a PPP is usually motivated by the need to meet some infrastructure demands in the society. To achieve this objective, the government invents opportunities and incentives for private sector participation and investment. Essentially, one of government's initial problems would involve the design of incentives that attract private investors. Such incentives may include the provision of subsidies, revenue guarantee, special taxation, currency risk guarantees, free use of land and public-properties. Particularly among developing countries, these measures often involve the removal of restrictive national policies that are inimical to entry of foreign investments in infrastructure, the establishment of PPP investment promotion agencies, various forms of financial and fiscal support, etc. For PPP to take place, it is important for the private investors to believe that government is committed to fulfilling the incentives that are finally adopted for the partnership. If governments are able to alter their commitments unilaterally, at the detriment of the private investors), the private investors would end up with an unfavorable payoff.

Examples of governments that failed to honor their agreement in PPP abound in literature. Governments sometimes renege on those clauses that seek to insure the private investor in a number of PPP projects. It is common for a new administration to decide not to honor all the agreement entered into by previous administrations. In particular, there were "also cases where legislation was passed to nullify contractual clauses and guarantees" (Iossa and Martimort, 2008: 29). As shown in Iossa and Martimort (2008), incumbent governments sometimes delay private's payment, thereby free riding on the cost of producing high quality project, while leaving the payment to future administrations. In addition, governments in some cases distort regulatory requirements to make room for possible political changes and subsequent concession renegotiations.

In a similar development, these complaints (late and inappropriate implementation of the Payment Trusts, non-payment of interest on late payments, wrongful imposition of fines and penalties, disregard of customs duties application) were brought up by a private investor – *i.e.*, "Duke Energy" with regard to the conduct of the government of Ecuador. According to the claimants:

> Ecuador failed to meet its obligation to establish the Payment
> Trusts prior to commercial operation. It generally breached the
> payment regime [...] by not complying with the calendar and
> manner of performing payments – including poor implementation
> of the Payment Trusts – and with the penalty regime, by assessing
> fines both without justification and in violation of the agreed time
> frames. It has also breached the customs duties regime of the

> Power Purchase Agreement in violation of the agreement, Ecuadorian law and its general obligation of good faith (ICSID, 2008: 24).[3]

Generally, the incentive for unilateral deviation, as exemplified in the instances above, is typical in strategic settings. Using insights from commitment literature, the following questions can be raised with regard to government behavior in PPP. First, what are the devices by which government commit to fulfilling a certain obligation in PPP? Second, how are these devices affected by the bargaining personality of the government? Third, is it possible to make the benefits of unilateral deviation less desirable for the government in PPP?

As Schelling (1960: 25) notes, "a potent means of commitment, and sometimes the only means is a pledge that places concession visibly beyond one's reach". In addition, Schelling argues that to constrain a player's choice, one may accomplish a commitment by an irrevocable maneuver that reduces one's freedom to make a change. Thus, commitment is said to include maneuvers that leave one in such a position that the option of non-fulfillment no longer exists. It amounts to an "invocation of some potent penalty, such that one would in all circumstances, prefer to carry out what was committed to", thereby making deviation an imposition of loss on oneself. A distinct feature of credible commitment, as Dixit and Nalebuff (1993) contend, is that it purposefully limits one's freedom of action or discretion.

In the light of these arguments, imperfect commitment becomes a problem when it is impossible for the government to fully commit itself to "the allocation functions" that impinge on the outcome of the partnership (Bester and Strausz, 2000b). Thus, imperfect commitment can be referred to as a setting where the set of government moves in the partnership consists of some moves that are non-contractible. It may also refer to the absence of supporting actions that could make the unilateral deviations from commitment costly or impossible.

5. The Problem with Dynamic Inconsistency

Generally, uncertainty with regard to government future preferences has long been acknowledged as a challenge to the growth of private investment. The issue of government behavior becomes particularly critical in PPP, since infrastructure investments are typically large and irreversible. In addition, these factors are worsened by the fact that infrastructure services are usually dependent on domestic demand, which may in turn expose government to the pressure to intervene and advance some short-term political interest (Smith, 1997: 45).

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[3] Having breached Article II(3)(a) of the BIT in relation to its guarantee of payment, the PPAs, Ecuadorian law and Article II(3)(c) of the BIT in relation to fines, and the PPAs and Article II(3)(c) of the BIT for having paid some invoices late; the tribunal decided that Ecuadorian government shall pay a nominal amount of fine, plus interest at the simple active rate quoted by the Central Bank of Ecuador from the date on which each fine became due and payable, until payment in full (ICSID, 2008).

Using a sample of 307 water and transport projects in Five Latin American countries between 1989 and 2000, Guash, Laffont and Straub (2006) found that 79% of the total government-led renegotiations in PPP occurred after the first election that took place during the life of the project. In many cases the central or local government during a re-election campaign decided to make unilateral changes on the initial terms of the partnership to secure popular support. Similarly, Brench et al (2005) observed that a major obstacle to the PPP experience in Hungary was the frequent change in political attitudes towards PPP and the collection of user charges or tolls. As a result, each change in government has resulted in a different attitude and a different institutional framework for PPP.

Like imperfect commitment, dynamic inconsistency refers to sequential policy uncertainty and stochastic re-planning in PPP agreements. It is regarded as a selfish behavior that exploits circumstances to gain immediate advantage through deviations from initial commitments. Selfish in this case means that it is at the expense of the other partner's payoff. As a challenge in PPP, it is usually worsened by the fact that PPP may involve partnering with two or more different regimes or administrations. In such a case, the new regimes may have an incentive to renege on the originally announced policy. In this paper, inconsistency is discussed in the context of policy changes, and unilateral modification of PPP contracts. Essentially, inconsistency is said to have taken place when government's re-optimization at a later date does not result in the continuation of initial government plan or commitment.

Due to uncertainty and incompleteness in PPP contract design, dynamic inconsistency is an issue that is often difficult to avoid. Notably, the concept of incompleteness is used to advance the argument that it is practically difficult to precisely specify future actions, schedules, and contingencies in advance. These constraints have direct implications on the costs and benefits of the rigidity that goes with consistency. As a result, it is difficult to ignore the constraints or costs associated with uncertainty, unverifiability, unforeseeable contingencies, indescribability, and bounded rationality in a discussion on inconsistency. It can be argued that consistency might be undesirable since all future contingencies that may require the need for modification are difficult to anticipate ex-ante. As Williamson (1979: 237) argues, appropriate "adaptations may not be evident for many contingencies until the circumstances materialize." As a result, systemic or policy changes may be unavoidable ex-post. In such case, government inconsistency may represent an improvement over the shortcomings of previous policies and commitments on PPP.

All things being equal, government commitment to a set of pure actions in a PPP should rule out the possibility of dynamic inconsistency. However, the flexibility that goes with inconsistency is regarded as a necessary room for policy adjustment to changing priorities. Without room for flexibility, it is argued that the government's ability to fulfill their responsibilities in a dynamic world will be constrained. As a result, some countries such as

those in Latin American region have administrative laws that allow the government to make unilateral interpretation and modifications to infrastructure concession agreements. In Colombia for instance, "a public authority can unilaterally interpret or modify a contract if it is considered necessary to prevent the service from being "paralyzed or seriously affected," as long as the financial-economic equilibrium of the initial contract is maintained and the contractor can with-draw if the modifications alter the value of the initial contract by 20 percent or more" (Smith, 1997: 52).

Notably however, the potential for inconsistency and unilateral modification can come with a number of risks. In PPP, inconsistency becomes a problem because, when the changes that are introduced by the governments undermine the payoff of the private investors. Such opportunistic changes can come in different ways. As Spiller (2008: 6) observes "governments may issue legislation making illegal a particular type of contract, even a contract it may have originally designed."

Consequently, the main contention with regard to dynamic inconsistency is on its effect on payoff equilibrium, or inter-personal utility comparison. Based on the dynamics of cost and benefit, dealing with uncertainty and unforeseen circumstances or opportunities may require the re-formulation of responsibilities and payoff; particularly when it is obvious to both parties that rigid consistency will undermine the mutual benefits. We argue that dynamic inconsistency can only be justified if the new game it induces leads to the achievement of pareto improvement from initial payoffs.

5.   **Summary of Inferences and Recommendations**:

Based on the foregoing discussion, the following inferences can be made in relation to government commitment and consistency in PPP. First, a government will have greater incentive to deviate from its commitment when the possibility of deterrence enforcement is low or non-existent. This inference is particularly relevant, given the sovereign personality of the government, and its ability to manipulate or capture its domestic judiciary, or any other domestic organ that is established for enforcing the agreements. Second, even if deterrence enforcement is possible, the government will still have an incentive to deviate from its commitment if the value of the maximum punishment is less than its actual benefits from deviation. Third, if the government's commitment is vague, such that it is difficult to prove non-compliance before a court of law, the government may have the incentive to re-interpret the commitment at the detriment of the private partner at a later date. Fourth, if government commitment is illegal (vis-à-vis the constitutional provisions of the country), an incoming administration will have the incentive and ability to renege on those commitments. Finally, if the government commits to a set of actions that are discretional or non-contractible ex-ante,

the incentive for opportunistic deviation will be high, if it decides to re-optimize or re-formulate its policy ex-post.

In sum, the line separating the problems of dynamic inconsistency and imperfect commitment is vague and inter-woven. The reason for this vagueness could be as a result of the inter-relationship between their consequences. In practice, the use of binding PPP agreements has the potential for addressing the problems of dynamic inconsistency and imperfect commitment. However, the scope of these issues may include various forms that are able to by-pass the restrictions of incomplete contract stipulations. Unfortunately, some famous examples of perfect commitment (such as "burning the bridge") may be difficult to implement in the PPP context. In addition to the use of traditional devices like Multilateral Investment Guarantee Agency (MIGA), Bilateral Investment Treaties (BIT) protections, and other forms of investment protection laws, some suggestions on how to makes imperfect commitment and dynamic inconsistent behaviors less attractive for the government are discussed in this section.

i. The use of inter-locking payoff mechanisms: It is suggested that PPP should try to make greater use of agreements that enjoy Schelling's "property of inter-dependent expectation". In PPP, achieving this property will require the use of strategies that can create a severe jeopardy for non-coordination. Examples in this regard are as follows:

a. Since most government distortions are motivated by public pressures and short-term political interest, a good way for reducing such distortions would be to enhance public awareness, participation and investment in the PPP. A notable example in this regard would be the capitalization form of PPP in Bolivia[4]. A participatory public-private-partnership will have the potential for many advantages. First, it will raise the stakes for unilateral government deviations. It will also reduce some of the political resistance and civil unrests that necessitate distortionary government interventions. With the involvement of long lasting systems like pension, incoming administration will have less incentive for opportunistic inconsistencies. In addition, regular update on investors' benefits and equity can re-enforce transparency in the management and performance of the PPP.

b. Since deterrence is more effective when it causes more harm to the deviator, the use of Minimum Revenue Guarantees can reduce the incentive for introducing "creeping"

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[4] Under the Bolivian form of PPP, also known as the "capitalization" process for instance, the government sets up a "mixed capital corporation" (MCC) to which a private partner contributes a 50% capital investment. By its payment, the investor gains the right to manage the firm. The shares owned by the government are transferred to the pension fund managers. The MCC is then transformed into a fully private company during this process, while the government's holding in the MCC is contributed to a pension scheme that provided annuity income to Bolivian citizens (Valdez, 1998; and Barja et al, 2004).

policies that undermine the payoff of the private investors. The efficiency of this approach is based on the fact that with such revenue guarantees, the government will not align its objectives to the actions that will induce shortfalls in revenue flow, given its commitment to offset reductions in private payoff.

c. In addition to MRG, Build-Transfer-Lease schemes should be used in highly sensitive sectors like water, schools, and other facilities, where it is difficult for the private investors to impose user fees above certain levels. Under this scheme, the private sector will build and transfer the facility to the government, and in return, get the right to operate the facility. Private returns on investments is covered mainly by installment government payments, rather than direct user charges, for the specified period of lease. One good advantage of this process is its ability to quantify government commitment (in terms of fixed installment payments). This will put government commitments in enforceable terms. Equally, it will simplify the monitoring and quantification of government compliance or default.

ii.. Specify all commitment in enforceable terms

In practice, it may be difficult to devise a commitment mechanism without making reference to the bargaining personality of the partners. For governments, tying their hands to a rigid commitment may be seen as an encroachment on their sovereignty. In such a case, the right to make changes is always important for the government. For the private investors, their right to compensation (when changes are made at their detriment) will highly depend on the contract stipulations. Thus, it pays to spell every commitment out, possibly in terms that will facilitate the detection of non-compliance.

iii. Introduction of Termination Payment

Under 'Termination Payment' framework, in countries like South Korea, the private investor can request the government to buyout the project in the event that the continued, construction or management of the facilities is impossible due to government's failure to perform its part of the agreement without justifiable grounds "for a year or longer, or where the construction or operation of the facility has been delayed or suspended for six months or longer because the government failed to perform its duty under the Concession Agreement" (Rep. of Korea 2007: 176). The Termination Payment can serve as a form of guarantee on 'sunk' private investments. It makes the cost of failure (in terms of inaction) less desirable for the government.

iv. Making the Process of Unilateral deviation Difficult

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It is possible for some countries to attract sufficient private investment in infrastructure without significant problems regarding the credibility or risk of government commitment. This kind of trust or privilege comes with some level of maturity in government policy and administration. For other aspiring countries, institutional efficiency, particularly the legal system that will enforce the agreements, is inalienable. It is not sufficient for a government to develop National Policies on PPP without a corresponding reform, and harmonization with all the laws applicable to the facilities where the application of PPP framework is intended. Since most of these existing laws confer absolute monopoly rights to the governments, private participation (in terms of investment, operation and ownership) will be risky if such laws are not repealed.

On a general note, the success of cooperation in strategic settings like PPP is highly dependent on the mechanism adopted for punishing deviation. In the absence of a guaranteed penalty for deviation, it will be unwise to cooperate with the government in the first place. In turn, the efficiency of the enforcement may depend on the qualities of the dispute settlement mechanisms. Having an efficient judiciary system, a set of constitutional provisions on PPP, and set of legal procedures that make contract alteration more participatory can reduce the ease of unilateral deviation. In addition, it is important to specify the mechanism for altering government commitment in a PPP contract. Through such stipulations, the private investor will have sufficient basis to ask for compensation, if the government unilaterally decides to adopt a different approach.

6.   Conclusion:

In this paper, we have regarded PPP as a cooperative game with a potential for competition and non-cooperation. The main focus has been on government deviations and non-compliance to its policies and agreements in relation to PPP, over time. In addition, to some existing instruments for mitigating the risks associated with government behavior in PPP, we have made some inferences and suggestions on how to make imperfect commitment and dynamic inconsistent behaviors less attractive and less easy for the government. For further research, it is recommended to examine the effects of these suggested options on the incentives of the private investors, to ensure that they do not create more room for private's moral hazard. In addition, we acknowledge the fact that it is important to expand the scope of actions in this model to accommodate the differences in roles and responsibilities, as found in various forms of partnership (such as Build-Operate-Transfer, Build-Transfer-Lease, *etc*).

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